



UNITED STATES PATENT AND TRADEMARK OFFICE

4

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/568,683

02/17/2006

Sumi Tanaka

33082M301

2808

441 7590 07/25/2007
SMITH, GAMBRELL & RUSSELL
1850 M STREET, N.W., SUITE 800
WASHINGTON, DC 20036

EXAMINER

EGGERDING, MATTHEW THOMAS

ART UNIT

PAPER NUMBER

1763

MAIL DATE

DELIVERY MODE

07/25/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/568,683

Applicant(s)

TANAKA ET AL.

Examiner

Matthew Eggerding

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 10 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 20060712; 20060217.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 1-9 in the reply filed on 5 July 2007 is acknowledged.

Drawings

The drawings are objected to because the connections between the heater and power supply patterns are unclear with respect to Fig. 4-6. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 5 is objected to because of the following informalities: "holing" in line 4 should be "holding." Appropriate correction is required.

Claim 7 is objected to because of the following informalities: add "first and" before "second drive" in line 6. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3 and 5-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "within a range" in claim 3 is a relative term that renders the claim indefinite. The term "within a range" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The positioning of the joint surface has been rendered indefinite by the use of the term.

For claim 5, the phrase "an outermost annular area thereof" is indefinite because it is unclear whether the phrase is referencing the annular area of the flanged part or the substrate holding table. For the sake of examination, the phrase will be interpreted as the outermost annular area of the flanged part.

Regarding claims 6 and 7, the connections between the heating mechanism parts, conductive patterns, and power supply lines are unclear because the Figures and

Art Unit: 1763

specification seem to show that the heating mechanisms and conductive patterns are connected to the power supply lines and each other.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2000021957 to Yoshida ("Yoshida").

Yoshida teaches a support column provided at a top end portion thereof with a flanged part, and a substrate holding table joined to the flanged part, wherein: the substrate holding table includes a heating mechanism; the substrate holding table is provided in a lower surface thereof with a U-shaped groove extending along an outer circumferential surface of the flanged part; and an inner circumferential surface of the U-shaped groove is connected to the outer circumferential surface of the flanged parts to form a continuous single plane. (See, for example, Fig. 1).

Regarding claim 2, Yoshida teaches both an end portion of a profile line of the inner circumferential surface of the U-shaped groove on a side of the flanged part and a profile line of the outer circumferential surface of the flanged part are situated on a single line segment extending in a vertical direction. (See, for example, Fig. 1).

For claim 3, Yoshida teaches the substrate holding structure is made by joining the flanged part and the substrate holding table to each other after forming them individually. (See, for example, Fig. 1).

For claim 5, Yoshida teaches a groove formed in a part of a portion, opposing the flanged part, of the lower surface of the substrate holding table (See, for example, Fig. 4, 6) and the flanged part joined to the lower surface of the substrate holding table only at an outermost annular area thereof. (See, for example, Fig. 1, 4).

Regarding claim 8, Yoshida teaches the substrate holding table and the support column are made of ceramics. (See, for example, para. [0017]).

For claim 9, Yoshida teaches a processing vessel connected to an exhaust system, a gas supply system that supplies a process gas into the processing vessel; and the substrate holding structure, as defined in claim 1, arranged in the processing vessel. (See, for example, Fig. 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

Art Unit: 1763

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

A. Claim 4

Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida in view of JP 2004-022382 to Goto et al. ("Goto").

Yoshida does not teach that an inner circumferential surface of the flanged part provides an inclined surface.

Goto teaches that an inner circumferential surface of the flanged part provides an inclined surface, which is inclined such that an inner diameter of the flanged part successively increases as approaching the lower surface of the substrate holding table. (See, for example, Fig. 1).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incline the inner circumferential surface of the flanged part in Yoshida.

The suggestion/motivation would have been to reduce thermal stress. (Goto, Abstract).

B. Claim 6

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida in view of JP 11-354526 to Watanabe et al. ("Watanabe").

Yoshida does not teach inner and outer heating-mechanism parts driven by first and second drive power supply system both extending in the support column, respectively.

Watanabe teaches an inner heating-mechanism part 9b and an outer heating-mechanism part 9a formed outside the inner heating-mechanism part; and the inner heating-mechanism part and the outer heating-mechanism part are driven by first and second drive power supply system both extending in the support column, respectively. (See, for example, Fig. 1, 2).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to divide the heater of Yoshida into inner and outer heating mechanism parts.

The suggestion/motivation would have been to increase temperature control. (Watanabe, Abstract).

C. Claim 7

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida and Watanabe as applied to claim 6 and further in view of US 6,215,643 to Nagasaki ("Nagasaki").

Neither Yoshida nor Watanabe teaches first and second semicircular conductive patterns.

Nagasaki teaches first and second semicircular conductive patterns 4 connected to first and second power supply lines 6; and the first and second conductive patterns substantially cover a whole area of the substrate holding table except for gap areas defined between the first conductive pattern and the second conductive pattern. (See, for example, Fig. 1B, 2A).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize semicircular conductive patterns with the teachings of Yoshida and Watanabe

The suggestion/motivation would have been because electrostatic chucks are conventionally employed for holding substrates. (Nagasaki, col. 1, lines 19-26).

None of these references specifically teaches the conductive patterns arranged below the heating mechanism. However, this configuration is merely a rearrangement of parts that is obvious in view of the prior art. See *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). The ability to of the conductive pattern to chuck the substrate actually decreases as the distance increases between the top of the holding structure and the conductive pattern. Hence, the placement of the conductive pattern below the mechanism would actually be deleterious and obvious as compared to the configuration in Nagasaki.

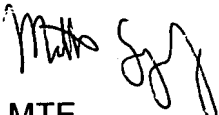
Further, these references do not teach the conductive patterns and heating mechanisms connected to the first and second power supply lines. It would have been obvious to do so because this configuration merely integrates the power supply lines that connect to the respective heater mechanisms and conductive patterns.

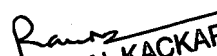
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew Eggerding whose telephone number is (571) 272-8012. The examiner can normally be reached on Monday-Friday, 8:30 AM-5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


MTE


RAM N. KACKAR, P.E.
PRIMARY EXAMINER